

The Genus *Pittosporum* (Pittosporaceae) on Rapa Island and on the Austral Islands, Polynesia  
Pacific Plant Studies 31<sup>1</sup>

HAROLD ST. JOHN<sup>2</sup>

UP TO THE PRESENT only two species of *Pittosporum* have been recorded for Rapa and the Austral Islands. F. B. H. Brown (1935: 100–101) made this single report. He described as new *P. rapense*, which is accepted though known only from the type collection. He identified Stokes 369 as *P. crassifolium* Cunn., of New Zealand, but now, with more complete material, it is clear that his was a misidentification. The following records are from the collections by the writer and his assistant, F. R. Fosberg, on the Mangarevan

Expedition of the Bernice P. Bishop Museum in 1934.

There seems to be no usable scheme of infrageneric taxa in the genus *Pittosporum*. The division into the series *Bivalvae* and *Trivalvae* is here used, though it is certainly based on characters that are inconstant, artificial, and of no evolutionary significance. For the species of Papuasias, Schodde (1972) described various sections, but these are of local application and not a new general taxonomy at the subgeneric level.

KEY TO SPECIES

- A. Capsules deeply rugose, tomentose, the opened valves nearly flat, 5–10 mm thick; leaves subverticillate; blades 7–13 × 2.6–4.2 cm (flowers unknown). Raivavae I.  
..... *P. raivavaeense*.
- A. Capsules smooth, but tomentose or glabrous; the opened valves concave, 1–2.5 mm thick; leaves alternate. Rapa I.
  - B. Petals yellow; blade margins thickened and revolute (fruit unknown)..... *P. luteum*.
  - B. Petals maroon to dark purplish,
    - C. Blades plane, the margins not revolute; capsules tomentose, (2–) 3-valved, the valve margins 0.5 mm thick ..... *P. purpureum*.
    - C. Blades with the margins thickened and revolute,
      - D. Petioles 5–18 mm long; blades 4–10.5 cm long, elliptic or oblance-elliptic (fruit unknown)..... *P. Maireaudi*.
      - D. Petioles 3–13 mm long,
        - E. Valve lateral margins 0.8 mm thick; capsules early glabrate; petioles 3–7 mm long; blades 2.3–5.3 cm long (flowers unknown) ..... *P. Takaeue*.
        - E. Valve lateral margins 1–2 mm thick; capsules tomentose; petioles 5–12 mm long,
          - F. Valve lateral margins 1 mm thick; capsules 8–11 mm long; blades 1.3–2.6 cm wide..... *P. perahuense*.
          - F. Valve lateral margins 2 mm thick; capsules 15–18 mm long; blades 2–3.6 cm wide..... *P. rapense*.

<sup>1</sup> Manuscript received 20 October 1976.  
<sup>2</sup> Bernice P. Bishop Museum, P. O. Box 6037, Honolulu, Hawaii 96818, U.S.A.

*Pittosporum luteum* sp. nov. (series?)

## Figure 1

DIAGNOSIS HOLOTYPI: Frutex 5 m alta est, ramis vetustioribus 3 cm diametro obscure badiis asperis glabratibus ligno succoso albo, ligno centrali badio, ramis unusquisque (3-) 2-furcatis, ramulis foliosis 1–2 cm longis 2–3 mm diametro teretibus cum tomento denso adpresse hinulei-colorato velatis, internodis 2–5 (–15) mm longis, nodis paululum incrassatis, cicatricibus foliorum 1–2.5 mm latis pallidis fere prostratis oblatiore hemisphaericis, cicatricibus fasciculorum 3, foliis alternatis adscendentibus 5–8 in apice brevi ramulae congregatis fere imbricatis, petiolis 5–12 mm longis supra late canaliculatis hinulei-tomentosis tarde glabratibus, laminis 3.7–7 cm longis 1.4–3 cm latis spatulatis oblanceolatis obtusis integris subtiliter coriaceis planis sed marginibus incrassatis revolutis in initio supra laxe tomentosis mox glabratibus obscure viridibus lucidis infra in initio dense fulvi-tomentosis tarde sparse tomentosis pallide subbadi-viridibus, nervis secundariis 7–10 in dimidio quoque curvatis adscendentibus remote ex margine incurvatis interconnectentibus supra obscuris infra evidentis midnervo uterque elevato, inflorescentia terminali umbellata cum 6–9 floribus, alabastris cum squamis inferis 2 mm longis hemisphaericis glabris sed ciliatis, alteris majoribus, eis superis 10 mm longis 1 mm latis spatulatis infra tomentosis supra glabris pilosi-ciliatis, in flore pedicelis 3–7 mm longis hinulei-tomentosis, 5 sepalis 5–6 mm longis 1.3–2 mm latis lineari-lanceolatis extra hinulei-tomentosis intra glabris, 5 petalis 12 mm longis 4 mm latis late spatulatis integris luteis, staminibus 5; filamentis 5 mm longis subulatis, antheris 2.5 mm longis anguste lancei-oblongis, pistillis 6.2 mm longis, ovario 3 mm longo oblongi-obovoideis dense adscendente subbadi-pilosis, stylo remote pilosulo, stigmatibus vadose obtusis (fructibus incognitis).

DIAGNOSIS OF HOLOTYPE: Shrub 5 m tall; older branches 3 cm in diameter, dark brown, roughened, glabrate; sapwood white; heart-

wood brown; branches (3-) 2-forked repeatedly; leafy branchlets 1–2 cm long, 2–3 mm in diameter, terete, concealed by the dense fawn-colored appressed tomentum; internodes 2–5 (–15) mm long; nodes little enlarged; leaf scars 1–2.5 mm wide, pale, nearly flush, very oblate hemispheric; bundle scars 3; leaves alternate, ascending, 5–8 crowded on the short branchlet tips, somewhat imbricate; petioles 5–12 mm long, broadly channeled above, tawny tomentose, but finally glabrate; blades 3.7–7 cm long, 1.4–3 cm wide, spatulate oblanceolate, obtuse, entire, thin coriaceous, plane, but the margins thickened and revolute, in youth the upper surface loosely tomentose, but soon glabrate, and shiny dark green, below in youth densely tawny tomentose, later sparsely so, and pale brownish green, secondary veins 7–10 in each half, curved ascending, inarched and interconnected well in from the margin, obscure above, distinct below, the midrib elevated on both sides; inflorescences terminal, 6–9-flowered umbels; lowest bud scales 2 mm long, hemispheric, glabrous but ciliate, increasing upwards to ones 10 mm long, 1 mm wide, spatulate, tomentose below, glabrous above, pilose ciliate; pedicels in flower 3–7 mm long, tawny tomentose; 5 sepals 5–6 mm long, 1.3–2 mm wide, linear lanceolate, tawny tomentose without, glabrous within; 5 petals 12 mm long, 4 mm wide, broadly spatulate, entire, yellow, above the middle saccate inflated; 5 stamens; filaments 5 mm long, subulate; anthers 2.5 mm long, narrowly lance oblong; pistil 6.2 mm long; ovary 3 mm long, oblong obovoid, densely ascending brownish pilose; style remotely pilosulous; stigma low obtuse (fruit unknown).

HOLOTYPE: Southeastern Polynesia, Rapa Island, Karapo Rahi Island, crest of ridge, edge of forest, 100 m alt., only tree seen, July 18, 1934, *H. St. John & J. Maireau* 15,602 (BISH).

DISCUSSION: The new epithet is the Latin adjective *luteus*, yellow, and it is given with reference to the yellow petals of the species.

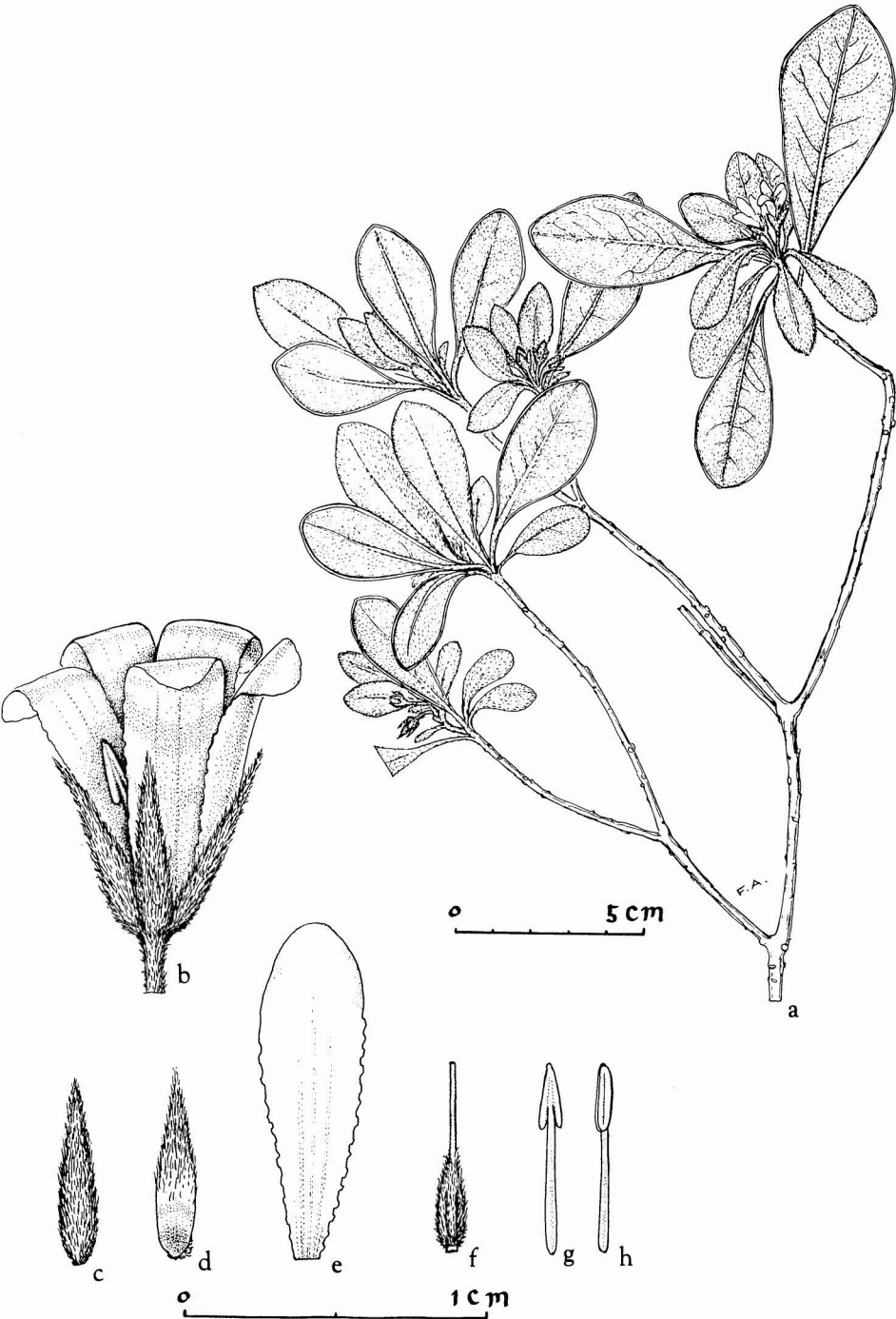


FIGURE 1. *Pittosporum luteum* St. John, from holotype. *a*, habit,  $\times \frac{1}{2}$ ; *b*, flower,  $\times 4$ ; *c*, sepal, distal view,  $\times 4$ ; *d*, sepal, proximal view,  $\times 4$ ; *e*, petal,  $\times 4$ ; *f*, pistil,  $\times 4$ ; *g*, *h*, stamen,  $\times 4$ .

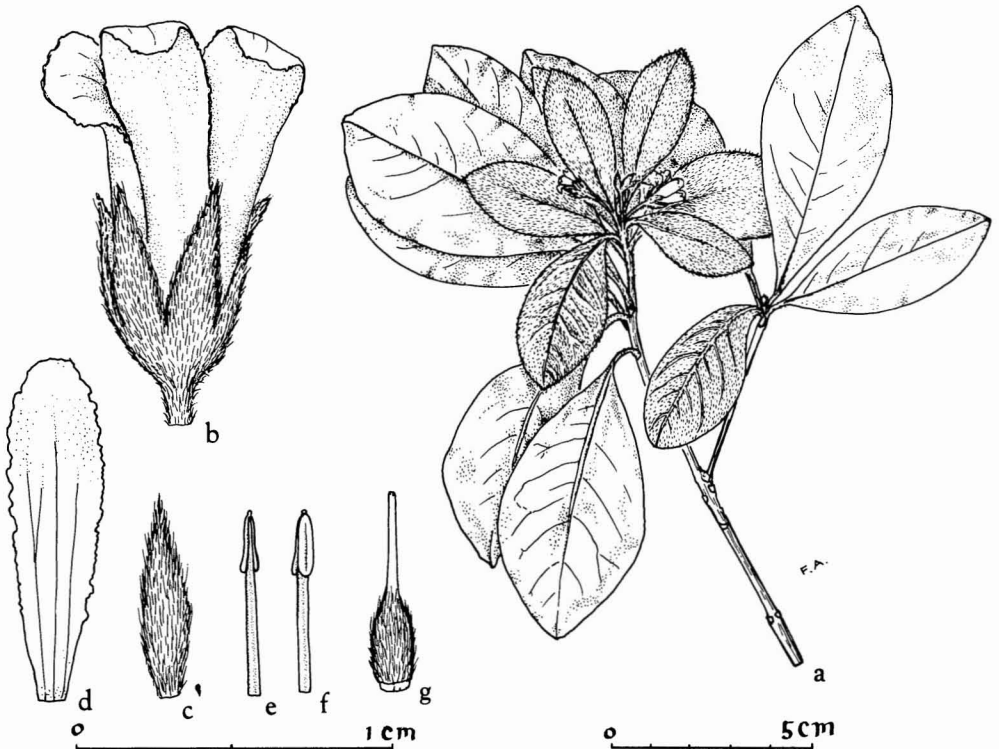


FIGURE 2. *Pittosporum Maireau* St. John, from holotype. a, habit,  $\times \frac{1}{2}$ ; b, flower,  $\times 4$ ; c, sepal, distal view,  $\times 4$ ; d, petal,  $\times 4$ ; e, f, stamen,  $\times 4$ ; g, pistil,  $\times 4$ .

***Pittosporum Maireau* sp. nov. (series?)**

Figure 2

DIAGNOSIS HOLOTYPE: Frutex 4 m alta est, novellis dense ferruginei-tomentosis, ramis plerumque bifurcatis, ramulis foliosis 2–2.8 mm diametro teretibus fulvi-tomentosis, ramis vetustioribus 3–5 mm diametro obscure badiis sublaevibus sed cum fugis parvis longitudinalibus et fissuris horizontalibus, internodis 2–32 mm longis, nodis non vel paulum incrassatis, alabastris cum squamis inferis 2 mm longis semiorbicularibus midnervo elevato marginibus membranaceis ciliatis, alteris majoribus, eis superis 11 mm longis 2.5 mm latis spatulati-oblanco-latis midnervo pilosulo marginibus ciliatis, cicatricibus foliorum 1.8–3 mm latis oblate semiorbicularibus prostratis pallidis, cicatricibus fasciculorum 3, petiolis 5–18 mm longis supra late canaliculatis fusc-tomen-

tosis, laminis 4–10.5 cm longis 2.2–5.3 cm latis ellipticis vel oblancei-ellipticis apice obtuse subacuto basi breve cuneata planis integris sed marginibus incrassatis revolutis in initio supra laxe tomentosis mox glabris lucidis obscure viridibus infra in initio dense ferruginei-tomentosis pilis longe persistentibus sed in parte glabris tum exlucidis pallide viridibus nervis secundariis 6–9 in dimidio quoque curvatis adscendentibus remote ex margine incurvatis interconnectentibus supra evidendis infra conspicuis midnervo in paginis ambis elevatis, inflorescentia terminali umbellata cum 3–7 floribus, pedicelis in flore 5–10 mm longis ferruginei-tomentosis, 5 sepalis 6 mm longis 1.7–2 mm latis elliptici-lanceolatis extra fusci-tomentosis intra glabris, petalis 11–12 mm longis 3–3.5 mm latis anguste oblanceolatis rubiaceis marginibus erosis, 5 staminibus, filamentis 4.5–4.7 mm longis subulatis, antheris 2 mm longis

oblongi-lanceolatis, pistilo 5 mm longo, ovario 2.5 mm longo ovoideo, stigmatibus obtusis, fructu incognito.

**DIAGNOSIS HOLOTYPE:** Shrub 4 m tall; young shoots densely ferrugineous tomentose; branches mostly 2-forked; leafy branchlets 2–2.8 mm in diameter, terete, tawny tomentose; older branchlets 3–5 mm in diameter, dark brown, smoothish, but with low longitudinal ridges and horizontal fissures; internodes 2–32 mm long; nodes not or but little enlarged; lowest bud scales 2 mm long, semiorbicular, the midrib elevated, the membranous margins ciliate; scales increasing to the uppermost ones which are 11 mm long, 2.5 mm wide, spatulate, oblanceolate, pilosulous on the midrib and ciliate on the margins; leaf scars 1.8–3 mm wide, oblate semiorbicular, flush, pale; bundle scars 3; petioles 5–18 mm long, widely channeled above, tawny tomentose; blades 4–10.5 cm long, 2.2–5.3 cm wide, elliptic or oblance-elliptic, the apex bluntly subacute, the base shortly cuneate, plane, but the entire thickened margin revolute, in youth the entire upper surface thinly tomentose, but early glabrate, shining dark green, below in youth densely ferrugineous tomentose, and the pubescence long persisting, but finally partly glabrate, and then dull, pale green, secondary veins 6–9 in each half, curved ascending, inarched interconnecting distant from the margin, clearly visible above, and conspicuous below; inflorescence a terminal 3–7-flowered umbel; pedicels in flower 5–10 mm long, ferrugineous tomentose; 5 sepals 6 mm long, 1.7–2 mm wide, elliptic lanceolate, tawny tomentose without, glabrous within; 5 petals 11–12 mm long, 3–3.5 mm wide, narrowly oblanceolate, maroon, the margins erose; 5 stamens; filaments 4.5–4.7 mm long, subulate; anthers 2 mm long, oblong lanceolate; pistil 5 mm long; ovary 2.5 mm long, ovoid; stigma obtuse; fruit unknown.

**HOLOTYPE:** French Polynesia, Rapa Island, Karapo Rahi Island, upper edge of forest, common, 100 m alt., July 18, 1934, H. St. John & J. Maireau 15,601 (BISH).

**DISCUSSION:** The new epithet is chosen to

honor M. Jean Maireau, school teacher on Rapa, a keen amateur in botany, who dismissed his school for a month in order to accompany me on my daily botanizing.

*Pittosporum perahuense* sp. nov. (series *Bivalvae*)

### Figure 3

**DIAGNOSIS HOLOTYPE:** Arbor 4 m alta est, ramulis vetustioribus 2.5–3.5 mm diametro obscure badiis teretibus laevibus sed cum fugis parvis longitudinalibus, ramis semel 2–3-furcatis, novellis dense fusci-tomentosis, alabastris cum squamis inferis 2 mm longis late ovatis apiculatis in costa crassa elevata puberulis marginibus membranaceis et ciliatis, bracteis alteris majoribus, eis superis 8–9 mm longis 3 mm latis anguste ellipticis chartaceis molliter tomentosis, ramulis foliosis 2–2.5 mm diametro sparse tomentosis, internodis 3–10 mm longis, nodis paululum incrassatis, cicatricibus foliorum 2 mm latis transverse ellipticis prostratis pallidis, cicatricibus fasciculorum 3, foliis alternatis adscendentibus sed non congregatis, petiolis 5–10 mm longis supra profunde canaliculatis tomentosis, laminis 3.7–6 cm longis 1.3–2.6 cm latis coriaceis oblanceolatis apice acuto planis sed marginibus incrassatis revolutis in initio supra laxe tomentosis mox glabratibus obscure viridibus lucidis infra in initio dense fusci-tomentosis mox paululum tomentosis et viridibus, nervis secundariis 6 in dimidio quoque in paginis ambis evidentibus adscendentibus remote ex margine inarcuatis interconnectentibus (floribus incognitis), infructescencia terminali umbellata cum 2–4 fructibus, pediculis 8–10 mm longis sparse tomentosis, capsulis 9–12 mm longis 8–11 mm diametro subglobosis cum apice brevi umbonato laevibus viridibus ad badiis sed fusci-tomentosis (3-) 2-valvatis valvis in sectione transversali concavis cum placenta centrali elevata ea ex basi ad 3/4 punctum cum 8–12 funiculis gracilibus, seminibus 3–6 mm longis 3–3.5 mm latis subnigris irregulariter rhombicis cum lateribus planis.

**DIAGNOSIS OF HOLOTYPE:** Tree 4 m tall; older branchlets 2.5–3.5 mm in diameter,

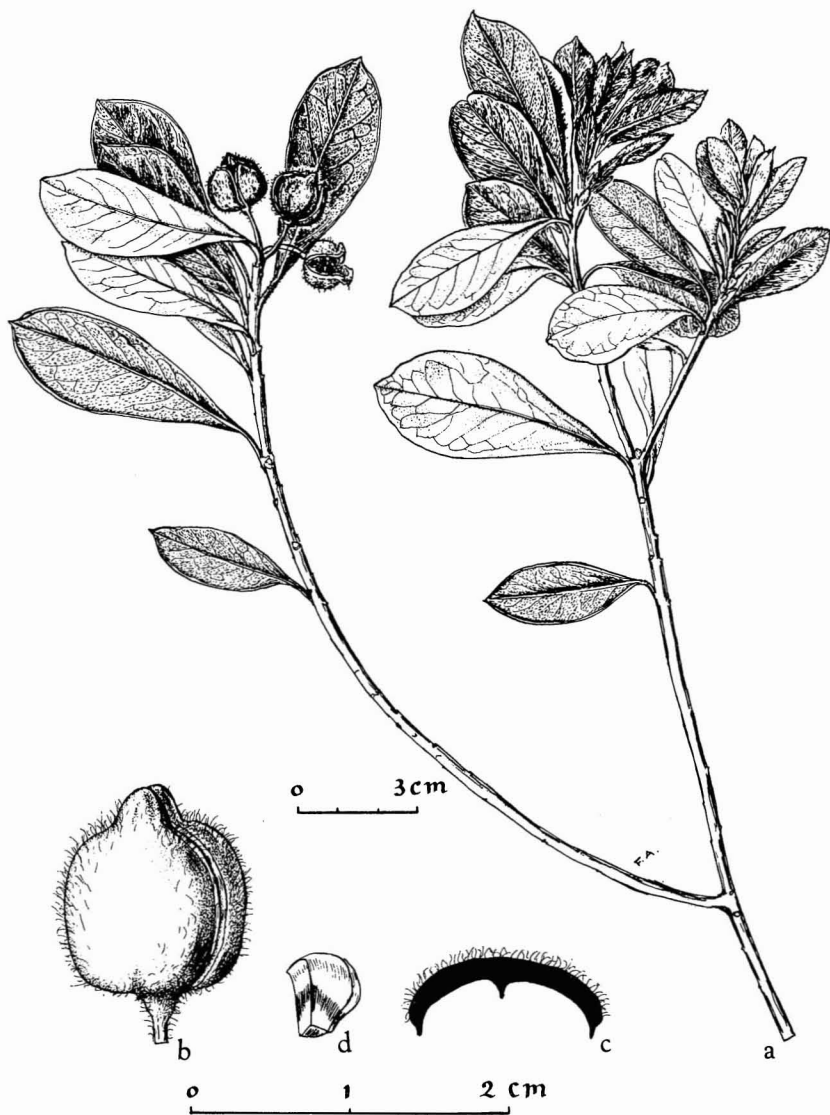


FIGURE 3. *Pittosporum perahuense* St. John, from holotype. *a*, habit,  $\times \frac{1}{2}$ ; *b*, capsule,  $\times 2$ ; *c*, cross section of capsule valve,  $\times 2$ ; *d*, seed,  $\times 2$ .

dark brown, terete, smooth, but with low longitudinal ridges; branches once 2–3-forked; young shoots densely tawny tomentose; lowest bud scales 2 mm long, broadly ovate, apiculate, puberulous on the thick raised costa, puberulous ciliate on the membranous margins, bracts increasing upwards to the uppermost ones which are 8–9 mm long, 3 mm wide, narrowly elliptic, chartaceous, softly tomentose; leafy branchlets

2–2.5 mm in diameter, sparsely tomentose; internodes 3–10 mm long; nodes scarcely enlarged; leaf scars 2 mm wide, transversely elliptic, flush, pale; bundle scars 3; leaves alternate, ascending but not crowded; petioles 5–10 mm long, deeply channeled above, tomentose; blades 3.7–6 cm long, 1.3–2.6 cm wide, coriaceous, oblanceolate, the apex acute, plane, but the thickened margin revolute, in youth the upper surface thinly

tomentose, when adult glabrate, dark green, shining; below in youth densely tawny tomentose, but when adult inconspicuously so and green, secondary veins 6 in each half, visible on both sides, ascending, inarched interconnecting remote from the margin (flower unknown); infructescence terminal, an umbel with 2–4 fruits; pedicels 8–10 mm long, sparsely tomentose; capsules 9–12 mm long, 8–11 mm in diameter, subglobose, with a short umbonate apex, smooth, green to brown, but tawny tomentose, (3-) 2-valved, its valves concave in cross section, 2.5 mm thick near the apex, 1 mm thick along the sides; each valve with a central raised placenta bearing 8–12 slender funicles from near the base and up 3/4 way; seeds 3–6 mm long, 3–3.5 mm wide, blackish, irregularly rhombic, with flattened faces.

EXPANDED DESCRIPTION: Trunk 8 cm in diameter.

HOLOTYPE: French Polynesia, Rapa Island, Taratika, e. side of Mt. Perahu, forested main ridge, 575 m alt., July 21, 1934, *H. St. John, F. R. Fosberg & J. Maireau 15,657* (BISH).

SPECIMENS EXAMINED: French Polynesia, Rapa Island, e. slope of Mt. Perahu, 70 m alt., July 9, 1934, *F. R. Fosberg 11,469* (BISH).

DISCUSSION: The new epithet is formed from the name of the type locality, Mt. Perahu, and *-ensis*, the Latin adjectival place suffix.

*Pittosporum purpureum* sp. nov. (series Trivalvae)

#### Figure 4

DIAGNOSIS HOLOTYPE: Planta lignosa 3 m alta est, novellis fusci-tomentosis, ramis unusquisque 3- vel 2–6-furcatis, ramulis foliosis 1–2 mm diametro teretibus fusci-tomentosis, ramis vetustioribus 2–4 mm diametro subrubri-badiis sublaevibus sed cum fugis parvis longitudinalibus, internodis 3–12 mm longis, nodis paululum incrassatis, cicatricibus foliorum 1.5–2.5 mm latis oblate hemisphaericis prostratis pallidis, cicatri-

cibus fasciculorum 3, foliis alternatis adscendentibus 3–12 in apice ramulae fere congregatis, petiolis 5–13 mm longis supra late canaliculatis fusci-tomentosis, laminis 3.2–8.3 cm longis 1.6–3.5 cm latis oblanceolatis (vel paucis parvis obovatis) obtusis integris planis marginibus non revolutis firme chartaceis in initio supra nervis sparse pilosis et midnervo tomentoso infra dense ferrugini-tomentosis nervis secundariis 6–8 in dimidio quoque curvatis adscendentibus et remote ex margine interconnectentibus evidentis midnervo supra depresso infra elevato, inflorescentia terminali umbellata cum 4–7 floribus, alabastris cum squamis inferis 2 mm longis hemisphaericis apiculatis pilosi-ciliatis et midnervo incrassato lanato, alteris majoribus, superis 13 mm longis 2.5 mm latis lineari-oblanceolatis et cum pilis simulantibus, pedicelis in flore 7–10 mm longis fusci-tomentosis, bracteis 5 mm longis fusci-tomentosis, floribus suaveolentibus, 5 sepalis 5–6 mm longis 1–1.5 mm latis lineari-lanceolatis extra fusci-tomentosis intra glabris 5 petalis 12–13 mm longis 3.8–4 mm latis spatulatis obscure purpureis trinervis apice undulato, 5 staminibus, filamentis 5.5 mm longis subulatis, antheris 2.5 mm longis anguste obcuneatis obtusis basi cum lobis binis descendentibus obtusis, pistillo 6.5 mm longo, ovario 3.5 mm longo lanceoloideo sparsim puberulo, stylo 3 mm longo glabro, stigmatibus concavo, pedicelis in fructu 10–14 mm longis glabratis, capsulis 12–15 mm longis 9–13 mm diametro subglobose apiculato plus minusve tomentoso vel subglabrato badio eis majoribus 3-valvatis illis minoribus 2-valvatis, valvis concavis in sectione transversa proxima apicem 0.5 mm crassis alibi 0.3 mm crassis et cum placenta elevata cum 8 funiculis ex basi ad punctum 2/3 ad apicem, seminibus 4–5 mm longis 2.5–5 mm latis subnigris lucidis subrhombicis lateribus interioribus planis.

DIAGNOSIS OF HOLOTYPE: Woody plant 3 m tall; young shoots tawny tomentose; branchlets 3- or 2–6-forked repeatedly; leafy branchlets 1–2 mm in diameter, terete, tawny tomentose; older branchlets 2–4 mm in diameter, reddish brown, smooth but with



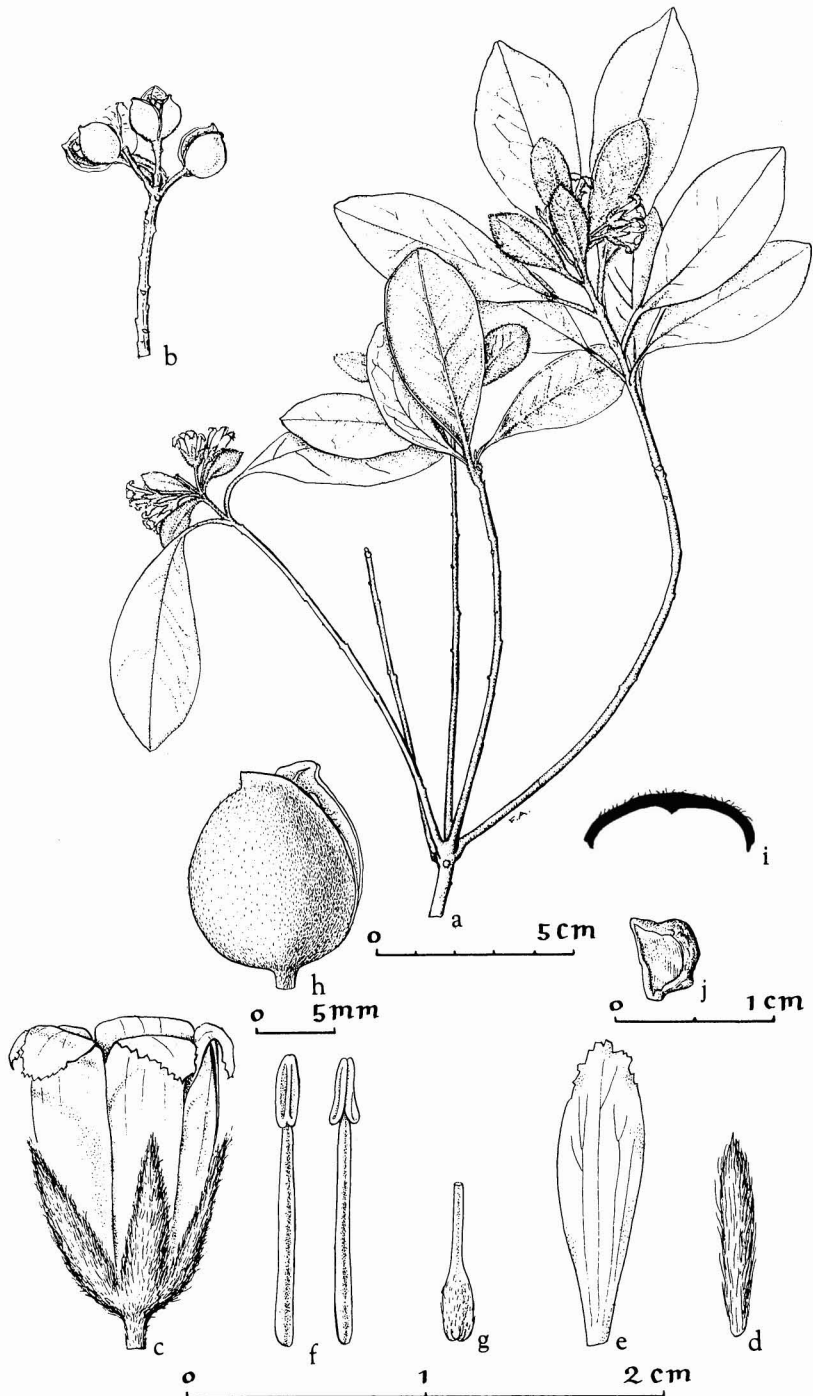


FIGURE 4. *Pittosporum purpureum* St. John, from holotype. a, habit,  $\times \frac{1}{2}$ ; b, infructescence,  $\times \frac{1}{2}$ ; c, flower,  $\times 3$ ; d, sepal, distal view,  $\times 3$ ; e, petal,  $\times 3$ ; f, stamen,  $\times 3$ ; g, pistil,  $\times 3$ ; h, capsule,  $\times 2$ ; i, cross section of capsule valve,  $\times 2$ ; j, seed,  $\times 2$ .



low longitudinal ridges; internodes 3–12 mm long; nodes but little enlarged; leaf scars 1.5–2.5 mm wide, oblate hemispheric, flush, pale; bundle scars 3; leaves alternate, ascending, 7–12 on the branchlet tips, somewhat crowded; petioles 5–13 mm long, broadly channeled above, tawny tomentose; blades 3.2–8.3 cm long, 1.6–3.5 cm wide, oblanceolate (or a few small ones obovate), obtuse, entire, plane, and the margin not revolute, firm chartaceous, in youth above the veins sparsely pilose and the midrib tomentose; below densely ferrugineous tomentose, the secondary veins 6–8 in each half, curved ascending, inarched interconnecting distant from the margin, visible above and below, the midrib sunken above, raised below; inflorescences terminal, a 4–7-flowered umbel; lowest bud scales 2 mm long, hemispheric, apiculate, lanate on the thickened midrib and pilose ciliate, increasing upwards to the upper ones 13 mm long, 2.5 mm wide, linear oblanceolate, with similar pubescence; pedicels in flower 7–10 mm long, tawny tomentose; bracts 5 mm long, tawny tomentose; flowers with sweet fragrance; 5 sepals 5–6 mm long, 1–1.5 mm wide, linear lanceolate, tawny tomentose without, glabrous within; 5 petals 12–13 mm long, 3.8–4 mm wide, spatulate, dark purple, 3-nerved, the upper margin undulate; 5 stamens; filaments 5.5 mm long, subulate; anthers 2.5 mm long, narrowly obcuneate, obtuse, the base with 2 obtuse descending lobes; pistil 6.5 mm long; ovary 3.5 mm long, lanceoloid, sparsely puberulous; style 3 mm long, glabrous; stigma concave; pedicels in fruit 10–14 mm long, glabrate; capsules 12–15 mm long, 9–13 mm in diameter, subglobose, apiculate, more or less tomentose to subglabrate, brown, dull, the larger ones 3-valved, the smaller ones 2-valved, the valves concave in cross section, 0.5 mm thick near the apex, 0.3 mm thick elsewhere, each valve with a central raised placenta, bearing 8 slender funicles from near the base to 2/3 way up; seeds 4–5 mm long, 2.5–5 mm wide, blackish, shining, irregularly rhombic, with flat inner faces.

EXPANDED DESCRIPTION: Tree 8 m tall, 30

cm in diameter; sapwood white; petals dark purple or madder; leaves when fresh white tomentose beneath.

HOLOTYPE: French Polynesia, Rapa Island, Hiri, steep slope near sea, edge of forest, 4 m alt., July 27, 1934, *F. R. Fosberg 11,632* (BISH).

SPECIMENS EXAMINED: French Polynesia, Rapa Island, valley 2/5 mile e. of Ahurei, upper woods, 50 m alt., July 1, 1934, *H. St. John & Fosberg 15,270* (BISH).

DISCUSSION: The new epithet is the Latin adjective, *purpureus*, purple, and it is chosen in reference to the purple petals.

*Pittosporum raivavaense* sp. nov. (series *Bivalvae*)

#### Figure 5

DIAGNOSIS HOLOTYPI: Arbor 5 m alta laxa ramosa est, ramis unusquisque bifurcatis, novellis subadpresse albi-lanatis, ramulis foliosis 2–5 mm diametro sparse lanatis, ramis vetustioribus 3–12 mm diametro glabratis sublaevibus pallide viridibus cum lenticelis suborbicularibus prominentibus, internodis 2–65 mm longis, foliis subverticillatis et 4–14 plerumque in 1–2 nodis congregatis, nodis incrassatis, cicatricibus foliorum 3–3.5 mm latis oblate hemisphaericis pallidis paululum salientibus, cicatricibus fasciculorum 3, alabastris cum squamis superis 8 mm longis 1 mm latis elliptici-oblongis adpresse lanatis, petiolis 5–15 mm longis supra canaliculatis glabratis, laminis 7–13 cm longis 2.6–4.2 cm latis subtiliter coriaceis oblanceolatis apice subacuto basi decurrenta planis marginibus incrassatis sed paululum revolutis (foliis juvenalibus incognitis), foliis adultis glabris supra lucidis obscure viridibus infra viridibus nervis secundariis 8–11 in dimidio quoque in paginis ambis evidentis incurvatis et remote ex margine interconnectis midnervo supra fere plano infra elevato, inflorescentia axillari et terminali compositi-umbellata cum floribus multis (floribus incognitis), sed solum 1–3 fructus maturantibus, pedunculo et pedicelis 5–10 mm longis, capsulis 17–36 mm longis 20–31 mm latis et licet 16–25 mm crassis late ovoideis ad subglobosis com-

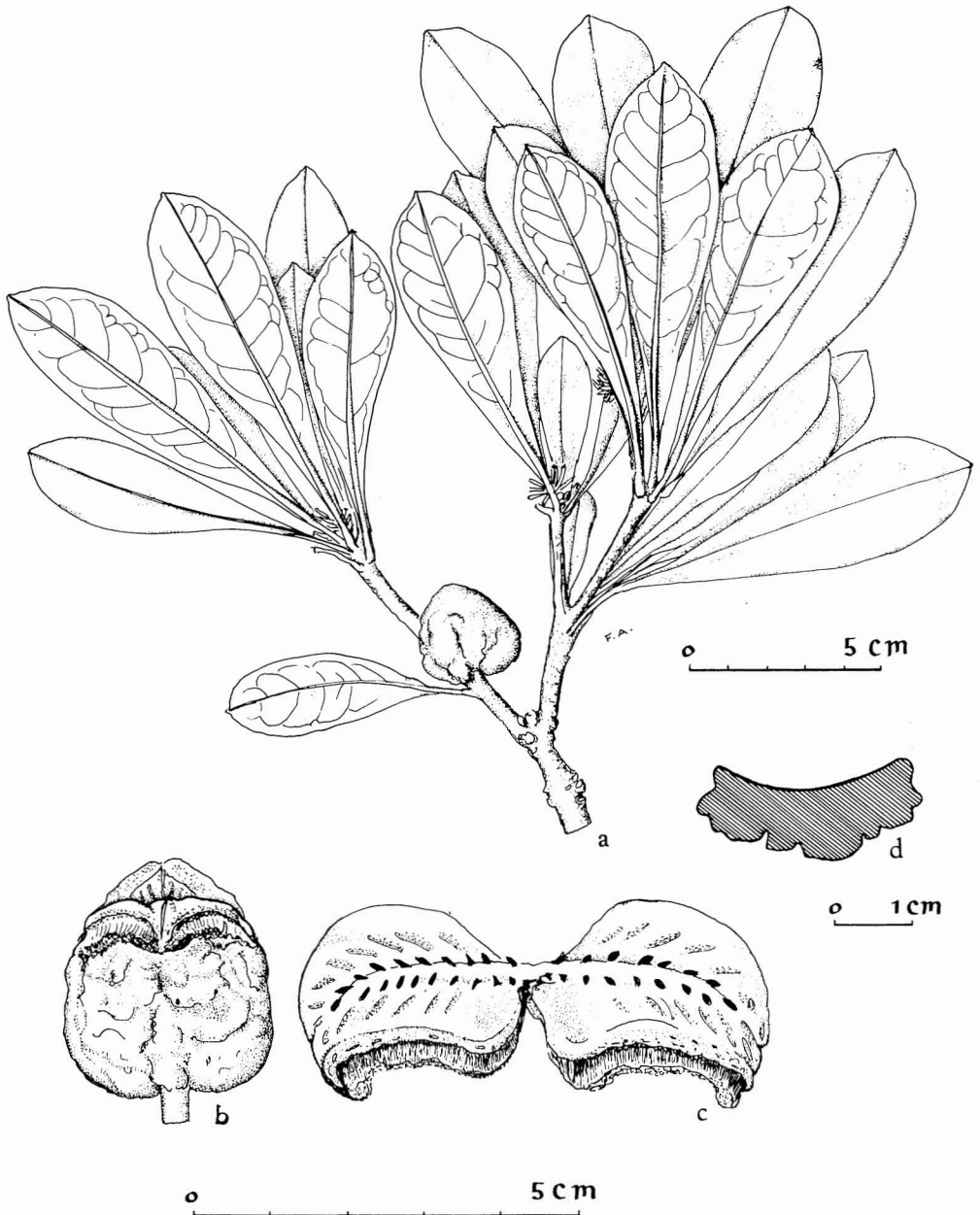


FIGURE 5. *Pittosporum raivavaense* St. John, from holotype. *a*, habit,  $\times \frac{1}{2}$ ; *b*, capsule,  $\times 1$ ; *c*, open capsule, inside view,  $\times 1$ ; *d*, cross section of capsule valve,  $\times 1$ .

pressis bivalvatis profunde rugosis in valliculis cum tomento badio persistenti sed fugis glabratis, valvis in sectione transversali fere oblongis gravibus proxima apice et in lateribus 5–7 mm crassis proxima basem

7–10 mm crassis, valva cum placenta centrali humili et ex basi ad  $\frac{2}{3}$  punctum cum 8–17 funiculis (seminibus incognitis), capsulis quando apertis extra viridibus intra aurantiacis.

**DIAGNOSIS OF HOLOTYPE:** Loosely branched tree 5 m tall; branches bifurcate repeatedly; young shoots subappressed white lanate; leafy branchlets 2–5 mm in diameter, sparsely lanate; older branches 3–12 mm in diameter, glabrate, smoothish, light gray, with prominent suborbicular lenticels; internodes 2–65 mm long; the leaves subverticillate, 4–14 crowded at mostly 1–2 nodal clusters; nodes enlarged; leaf scars 3–3.5 mm wide, oblate hemispheric, pale, slightly salient; bundle scars 3; upper bud scales 8 mm long, 1 mm wide, elliptic oblong, appressed lanate; petioles 5–15 mm long, channeled above, glabrate; blades 7–13 cm long, 2.6–4.2 cm wide, thin coriaceous, oblanceolate, the apex subacute, the base decurrent, plane, the margin thickened, but only slightly revolute (juvenile leaves not seen); mature blades glabrous, above shining dark green, below green, secondary veins 8–11 in each half, visible on both sides, ascending, incurved interconnected well in from the margin; midrib nearly plane above, elevated below; inflorescences axillary and terminal, of many-flowered compound umbels (flowers unknown); infructescences producing 1–3 fruits; the peduncle with pedicels 5–10 mm long; capsules 17–36 mm long, 20–31 mm wide, apparently 16–25 mm thick, broadly ovoid to subglobose, compressed, 2-valved, deeply rugose, persistently brown tomentose in the valleys, glabrate on the ridges, the valves nearly oblong in cross section, massive, 5–7 mm thick near the apex and along the sides, 7–10 mm thick near the base, each valve with a low central placenta bearing 8–17 funicles from near the base to 2/3 way up (seeds not seen); the capsules open when green outside, but orange inside.

**EXPANDED DESCRIPTION:** Blades 7–19 cm long, 2.6–6.2 cm wide.

**HOLOTYPE:** French Polynesia, Austral Islands, Raivavae Island, s. slope of Mt. Muanui, dense forest, 180 m alt., Aug. 8, 1934, *F. R. Fosberg 11,706* (BISH).

**SPECIMENS EXAMINED:** French Polynesia, Austral Islands, Raivavae Island, Vaiuru, n.e. slope, open dry forest, abundant locally,

50 m alt., Aug. 10, 1934, *Fosberg 11,736* (BISH); e. slope of Mt. Muanui, moist wooded gulch, 190 m alt., Aug. 8, 1934, *H. St. John 16,043* (BISH); s.w. slope of Mt. Turivao, moist woods on hillside, 190 m alt., Aug. 13, 1934, *St. John & E. C. Zimmerman 16,198* (BISH).

**DISCUSSION:** The new epithet is formed from the name of the type locality, Raivavae, and *-ensis*, the Latin adjectival place suffix.

*Pittosporum rapense* F. Br., B. P. Bishop Mus., Bull. 130: 101, 1935

#### Figure 6

**ORIGINAL DIAGNOSIS:** “Folia prope apicem ramorum conferti; petioli 1.5 mm, pubescentes; laminae plerumque obovatae, 10 cm longae, 3 cm latae, apice acutae ad subacuminatae, integrae, coriaceae, supra primum pubescentes demum glabrae, subtus dense lanigerae, venulis minute reticulatis. Inflorescentia terminalis, umbellata, pedunculo brevi. Capsula 1.5 cm longa, 2–3-valvata, pubescens ad subglabra; semina 5 mm longa.”

**EXPANDED DIAGNOSIS OF HOLOTYPE:** Arborescent; young shoots fawn-colored tomentose; leafy branchlets 2–4 mm in diameter, more sparsely hairy to glabrate; older branchlets dark brown, rather smooth; internodes 3–15 mm long; nodes not or but little enlarged; leaf scars 3 mm wide, lunate, pale, flush; leaves alternate; petioles 7–15 mm long, fawn-colored tomentose, broadly channeled above; blades 5–9.3 cm long, 1.9–4 cm wide, thin coriaceous, oblanceolate or elliptic oblanceolate, subacute or obtuse, the base cuneate and shortly decurrent, plane, but the thickened margin revolute, in youth above thinly white tomentose, when adult dark green, shining, glabrate except on the midrib near the base, below fawn-colored tomentose, secondary veins 9–13 in each half, ascending, slightly curved, obscure towards the margin (flowers unknown); infructescence terminal, a 2–3-flowered umbel; pedicels 12–17 mm long, tomentose; capsules 12–20 mm long, 12–17 mm wide, subglobose, tomentose,

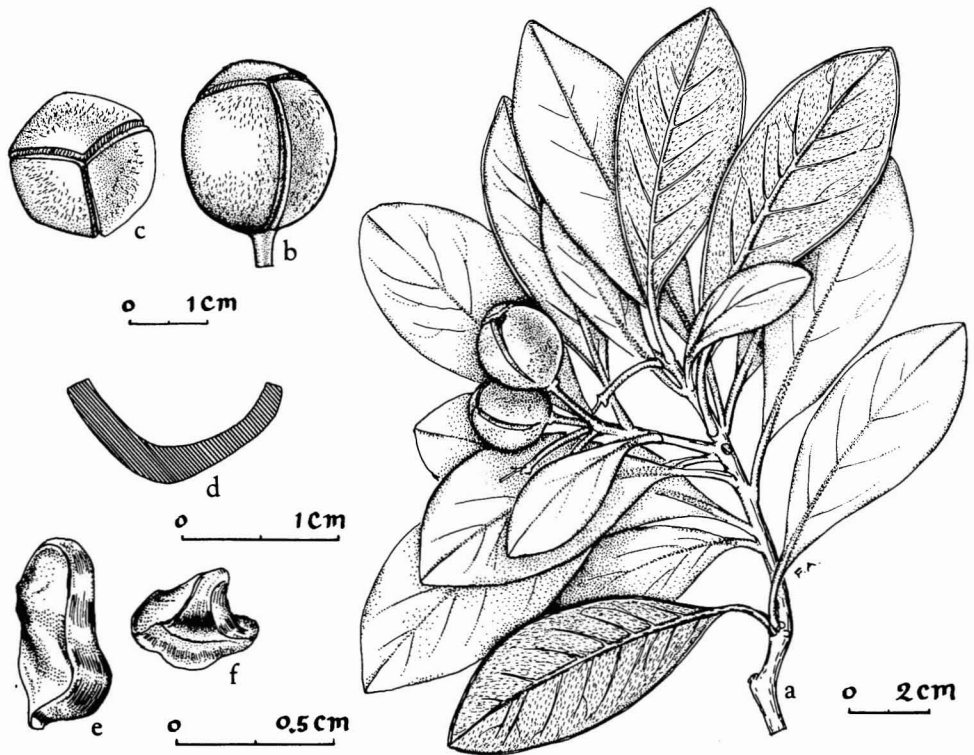


FIGURE 6. *Pittosporum rapense* F. Br., from holotype. *a*, habit,  $\times \frac{1}{2}$ ; *b*, *c*, capsule,  $\times 1$ ; *d*, cross section of capsule valve,  $\times 2$ ; *e*, *f*, seeds,  $\times 4$ .

smooth, 2–3-valved, the valves convex, the margins 2 mm thick near the apex, 1–1.7 mm thick along the sides, the placenta running up the middle, slightly raised, extending from near the base  $\frac{2}{3}$  way, bearing 8–12 slender funicles; seeds 5–7 mm long, 3.5–4.5 mm wide, irregularly rhombic, shining blackish brown, the flattened sides finely rugulose.

**HOLOTYPE:** French Polynesia, Rapa Island, Whitney Expedition, 1921?, *E. H. Quayle* no. X (BISH). Isotypes (BISH).

**DISCUSSION:** Brown described this species as with obovate leaves, but they are better described as oblanceolate.

Brown recorded his measurements by a unique notation, viz: “blades  $10 \pm$  cm long and  $3 \pm$  cm broad. . . .” This notation looks scientific, until one considers it. A leaf can be 10 plus cm long, but how can it also be 10 minus cm long? The method is ludicrous. Brown did not explain it, but apparently by

his  $\pm$ , plus or minus, he meant about or on the average. At other places he stated a structure as 1–3+ cm long. That can be understood as 1–3 cm, the usual range measurements, and rarely a larger, unrecorded number was also observed.

This species is known only from the type collection.

Since an individual tree of this species produces both 2-valved and 3-valved capsules, it cannot be placed in either of the existing series of the genus.

***Pittosporum Takaele* sp. nov. (series *Bivalvae*)**

Figure 7

*P. crassifolium* sensu F. Br., 1935, non Banks & Soland. ex A. Cunn. 1839.

NOM. VERN.: “takaele” (Rapan lang.).

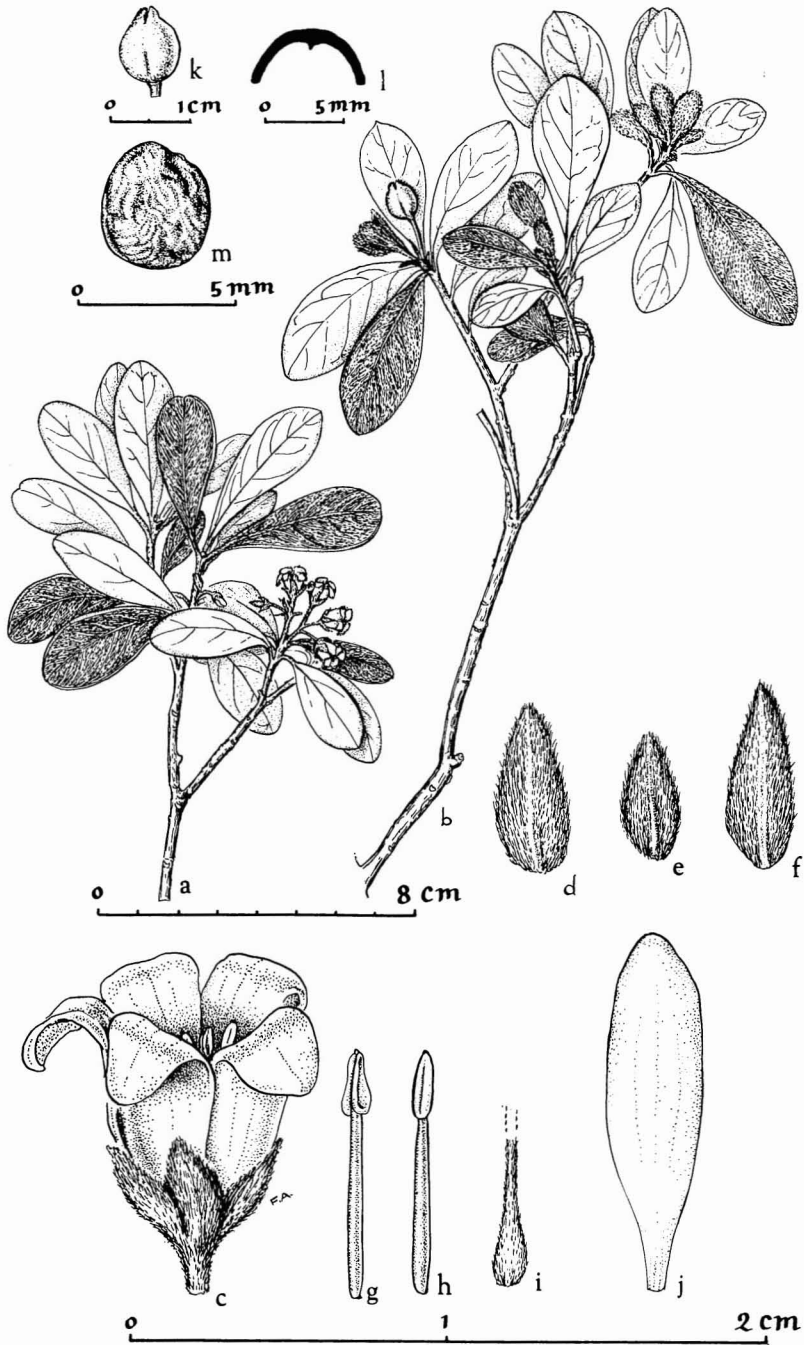


FIGURE 7. *Pittosporum Takauele* St. John, from holotype. *a, b*, habit,  $\times \frac{1}{2}$ ; *c*, flower,  $\times 4$ ; *d, e, f*, sepals, distal view,  $\times 4$ ; *g, h*, stamen,  $\times 4$ ; *i*, pistil,  $\times 4$ ; *j*, petal,  $\times 4$ ; *k*, capsule,  $\times 1$ ; *l*, cross section of capsule valve,  $\times 2$ ; *m*, seed,  $\times 4$ .

**DIAGNOSIS HOLOTYPE:** Arbor 6 m alta est, novellis fusci-tomentosis, ramulis 2-3-furcatis, ramulis foliosis 1.3-2 mm diametro teretibus fusci-tomentosis, ramis vetustioribus 2-5 mm diametro badiis vel obscure badiis sublaevibus sed cum fugis vadosis longitudinalibus, internodis 2-9 mm longis, nodis paucis incrassatis, cicatricibus foliorum 1-2 mm latis obliore semiorbicularibus fere prostratis pallidis, cicatricibus fascicularum 3, foliis alternatis 8-11 in apice rami adscendentibus vel divergentibus non congregatis, petiolis 3-7 mm longis supra late canaliculatis tomentosis vel subglabris, laminis 2.3-5.3 cm longis 1.3-2.2 cm latis oblanceolatis obtusis (vel subacutis) integris planis subtiliter coriaceis sed marginibus incrassatis revolutis in juventa omnino tomentosis sed in maturitate supra glabris olivaceis sublucidis infra dense fusci-tomentosis nervis secundariis 5 in dimidio quoque curvatis adscendentibus inarcuratis remote ex margine infra conspicuis, midnervo elevato, squamis inferis alabastri 2 mm longis late deltoideis midnervo incrassato in apice puberulo marginibus membranaceis puberulentis-ciliatis, bracteis superis majoribus illis superis 8 mm longis 3 mm latis anguste lanceolatis tomentosis, infructescentia terminali cum 1(-2) fructibus, pedicelis in fructu 9-12 mm longis glabris, capsulis 12-13 mm longis 8-10 mm diametro subglobosis viridibus ad badiis mox glabris in apice umbonatis 2-valvatis, valvis in sectione concavis ad apicem et in lateribus marginibus 0.8 mm crassis sed proxima basem 1 mm crassis, valvis cum placenta centrali elevata cum 5 funiculis conicis ex basi ad medium, seminibus 3-3.5 mm longis 1.5-2.5 mm latis nigris lucidis irregulariter rhombicis cum lateribus interioribus planis.

**DIAGNOSIS OF HOLOTYPE:** Tree 6 m tall; young shoots tawny tomentose; branchlets 2-3-forked; leafy branchlets 1.3-2 mm in diameter, terete, tawny tomentose; older branchlets 2-5 mm in diameter, brown to dark brown, smoothish, but with low longitudinal ridges; internodes 2-9 mm long; nodes scarcely enlarged; leaf scars 1-2 mm wide, very oblate semiorbicular, nearly flush,

pale; bundle scars 3; leaves alternate, 8-11 on the branch tips, ascending or diverging, not crowded; petioles 3-7 mm long, broadly channeled above, tomentose to subglabrate; blades 2.3-5.3 cm long, 1.3-2.2 cm wide, oblanceolate, obtuse (or subacute), entire, plane, but the thickened margins revolute, thin coriaceous, in youth tomentose throughout, but in maturity above olive green, glabrate, somewhat shiny, below closely tawny tomentose, secondary veins 5 in each half, curved ascending, inarched interconnected remote from the margin, easily seen below, but rather obscure above, midrib raised on both sides; lowest bud scale 2 mm long, broadly deltoid, the thickened midrib puberulent at apex, the membranous margins puberulous ciliate, the bracts increasing upwards, and the uppermost bract 8 mm long, 3 mm wide, narrowly oblanceolate, tomentose; infructescence terminal, with 1 (-2) fruits; pedicels in fruit 9-12 mm long, glabrate; capsules 12-13 mm long, 8-10 mm in diameter, subglobose, umbonate at apex, green to brown, early glabrate, 2-valved, the valves concave in cross section, the margin 0.8 mm thick near the apex and down the sides, but 1 mm thick near the base, each valve with a central raised placenta, bearing 5 conic funicles from the base to the middle; seeds 3-3.5 mm long, 1.5-2.5 mm wide, black, shining, irregularly rhombic, with flat inner faces.

**EXPANDED DESCRIPTION:** Tree 6-8 m tall, trunk 30 cm in diameter; bark black; inflorescence a 2-5-flowered umbel; pedicels in flower 5-7 mm long; bracts 5 mm long, linear, tomentose; 5 sepals 4-4.5 mm long, 1.5-2 mm wide, lance elliptic, tomentose except on the midrib; 5 petals 9.5 mm long, 3 mm wide, narrowly oblanceolate, "dark purplish"; 5 stamens 6.5 mm long; filaments 5 mm long, subulate; anthers 2 mm long, lanceolate, the apex obtuse, the base slightly sagittate; ovary 3.5 mm long, broadly lanceoid, tomentose; style 2.5 mm long, glabrous; stigma truncate, subbifid; capsules 8.5-12 mm long, 8-9 mm in diameter, subglobose, but with an apical 1 mm beak, glabrous, brownish, smoothish but subrugose, 2-

valved, the valves convex in cross section, 0.5–1 mm thick, thickest near the base, and the apex thicker than the sides, each valve with a central raised placenta, and from 1/3–2/3 way bearing 5–6 short funicles; seeds 3.6–3.7 mm long, blackish, irregularly angular obovoid.

HOLOTYPE: French Polynesia, Rapa Island, Taratika, e. side of Mt. Perahu, steep, wind-swept slope, 450 m alt., July 15, 1934, *H. St. John & J. Maireau 15,565* (BISH).

SPECIMENS EXAMINED: French Polynesia, Rapa Island, Oromanga forest, s. side of Tangikeu Mt., steep wooded s. slope, 225 m alt., July 11, 1939, *St. John & Maireau 15,486* (BISH); Mititiparu, top of ridge, 950 ft elev., Oct. 26, 1921, *J. F. G. Stokes 369* (BISH).

DISCUSSION: The two flowering sheets, *Stokes 369*, were identified by F. B. H. Brown as *P. crassifolium* Cunn. They resemble that New Zealand species in their oblanceolate

blades with revolute margins. However, they differ in their smaller sepals which are ascending pilosulous, and in their smaller, 2-valved capsules. Now that complete material is available, it is clear that this species of Rapa is distinct from the one of New Zealand.

DISCUSSION: The new epithet, Takauale, is the vernacular name of the species on Rapa Island.

#### LITERATURE CITED

- BROWN, FOREST B. H. 1935. Flora of South-eastern Polynesia. III. Dicotyledons. Bull. Bernice P. Bishop Mus. 130. 386 pp., 70 figs., 9 pls.
- SCHODDE, R. 1972. A review of the family Pittosporaceae in Papuasias. Aust. J. Bot., suppl. 3: 1–60.